



COTS CM Automated Configuration Status Accounting Tool (ACSAT)



FLEET LOGISTICS SUPPORT IMPROVEMENT Conference

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POC: Technical -



Topics of Discussion

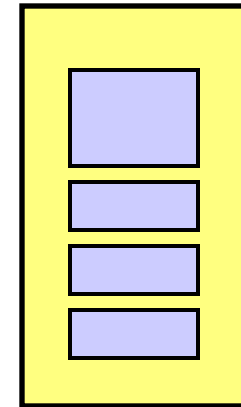
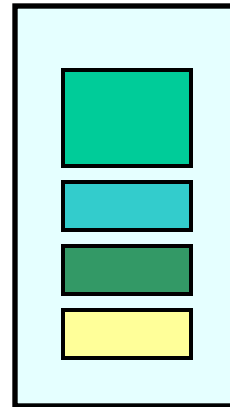
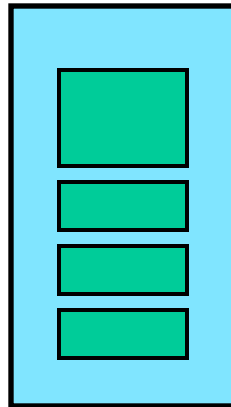
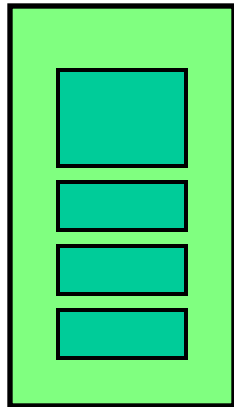
- Problem Description
- Proposed Solution
- Implementation/Vision
- Next Step

Problem Description

COTS Configuration

Management !

Integration Lab → Ship 1 → Ship 2 → Ship n*



1999 CCA Baseline
CCA Rev n

CCA BL

CCA Rev A

2000 CCA Rev A

CCA Rev A

CCA Rev B

2002 CCA Rev B

CCA Rev B

CCA Rev C

CCA Rev F

- H/W & S/W Rev. changes, new OEMs, Mods, new P/N, next generation components, new technology
- Forward & Reverse Compatibility Issues further complicates this picture 3

Proposed Solution

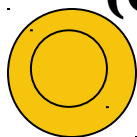
Using Best Commercial Practices

- Material Identification Options
 - Contact Memory Button (CMB)
 - Direct Part Marking (DPM)
- Smart Card Technology To Implement
 - Automated Configuration Status

Contact Memory Button (CMB) Serial Number Tracking

Contact Memory Button

(CMB)



Top View



Side View

Physical Characteristics

- Small stainless steel containers
- Size of a small button
- A memory chip sealed inside
- Directly attached to object.
- A contact device used to write/ read data
- Typically used in harsh environments
- Sealed to resist moisture, temperature extremes, and radiation

Functional Characteristics

Advantages:

- 2k,8k,32k Memory Sizes

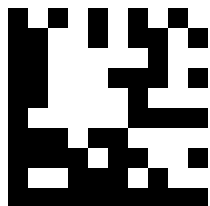
Disadvantages:

- Glued on (Reported instances of falling off)
- Footprint based on Memory Button Size
- Height/space interference use limitations (3-D)

Typical applications

- Serial Number Tracking,
- Maintenance,
- Access control,
- Animal tracking,
- Tracking of physical assets, (e.g., fire extinguishers, gas cylinders, or pallets.)

Direct Part Marking (DPM)



Data Matrix Symbol

Physical Characteristics

- 2-D data Matrix Symbol
- Scaleable depending on amount of data (ranging from 1/64 to 2.5 Sq. In.)
- Built-in code redundancy for high reliability
- Maximum data 1558 ASCII characters per symbol
- Directly marked on objects.
- Multiple marking methods
- Can mark wide range of materials
- Resistant to moisture, temperature extremes, radiation, and various acid tests.

Functional Characteristics

- Capability to write data once-read many times
- Can hold 100 times more data than Barcodes

Proven Technology developed and used by NASA

Deployed on Space Shuttle Endeavor

Advantages:

- Durable for item life cycle identification
- Suitable for harsh environments (e.g., Space Shuttle, Subs/ships...)
- Flat small Footprint (depending on amount of data, base-material, scalability)
- One tool reads all symbols and legacy 1-D, 2-D Barcodes, and Multi-Row Data Matrices (PDF417, Code-One, Data-Matrix, Maxi-Code, etc.)

Disadvantages:

- Re-marking, if item data changed

Many Proven Commercial Uses:

- Electronics,
- Aerospace,
- Medical,
- Auto,
- Pharmaceutical,
- Material & Asset Tracking,
- Inventory and others...

Data Requirements & Format

Uniform Symbol Data Structure
(Standardization)

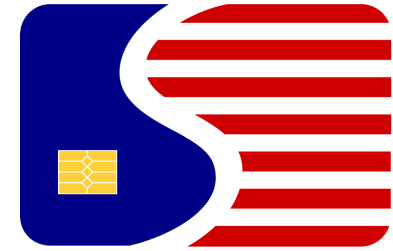
Standard Data
Lowest Replaceable Unit/Configuration Item
Requirements (LRU/CI)

Part #:	123456789-AXX
Item Name:	Nomenclature
Serial #:	A123456789
Mfg. Date:	08252000
Rev.Level:	C123
OEM:	NAVSEA/NUWC KPT
Cage Code:	00253
NSN:	XXXXXXXXXXXXXX
UIC #:	YYYYYYYYYYYYYY
Software:	ZZZZZZZZZZZZZZ
S/W Rev.:	R123
Next-Hi-Assy:	123456789-AXYZ
Contract #:	N00406-99-D-

This data encoded,
can be contained
Within a symbol
(approx. 0.25" x 0.25")
300 Characters
Data Matrix



Smart Card



- Currently Deployed by **SMARTCARD** Navy

as Common Access Card (CAC)

- Supply Supported (GSA)
- Data Accuracy
- Enabler / COTS CM
- Asset Visibility /

Tracking

- Digital Data Collection

- Currently 48 k Bites Memory

- Limited Production of 64 K Memory



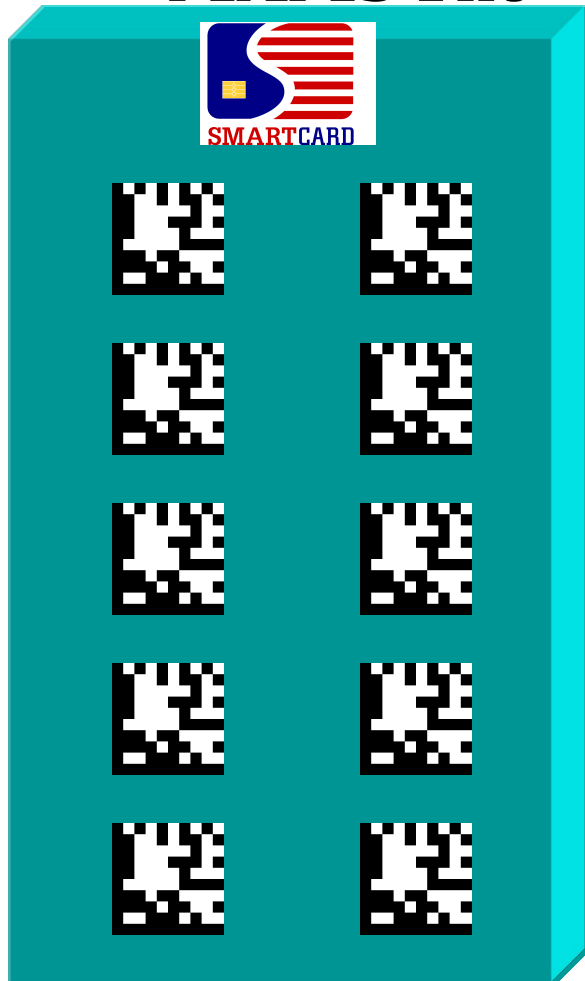
Potential Applications of Direct Part Marking (DPM)

- Material Identification
 - Maintenance Assistance Modules (MAMs)
 - OBRPs
 - Lowest Replaceable Units (LRU)
 - Configuration Items (CI)
- Asset Tracking
 - Global Asset Visibility
 - Inventory Management
 - Configuration Management
 - Physical Configuration Audit
 - Warranty / Guarantee Records
 - Counter-fit Identification and Recall (Air Borne Applications)
- Advance Failure Notification Process Im

Typical MAMs Application

Maintenance Assistance Modules

MAMs Kit



- **MAMs Kit Items each ID with 2-D Markings.**
- **Smart Card Provides Latest Configuration Record of MAMs Kit Contents.**
- **Smart Card Updates to Reflect Configuration Changes.**
- **MAMs inadvertently left in Operating System.**
- **2-D Markings Identifies MAMs Card Used to Maintain MAM Kit Integrity**



Automated Configuration Status Accounting Tool (ACSAT) Process

- Digital Data Collection
 - Apply Machine Readable 2-D Symbol (Data Matrix) to Each LRU/CI .
 - Scan to read Matrix Symbols and to collect Digital Data from all LRU/CI
(Per Defined Unit/Sub-System/System)
 - Transfer Collected Digital Data

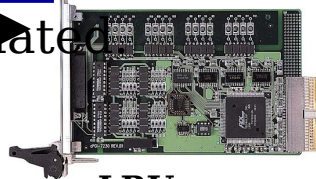
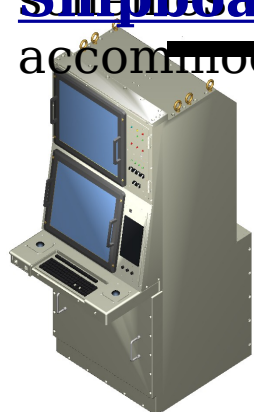
ACSAT Overview

System Components & Interfaces

Digital Information is Encoded and Implanted on LRU, Then Read, Stored, and Transported Using Various Methods.

- Information can be encoded and implanted on any surface.

- Multiple Bar-coding Shipboard be accommodated



LRU



Data Matrix



Wire Co



Wireless



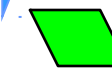
Hand Held



Anchordesk.com

Integrated Information System

Logistics Data

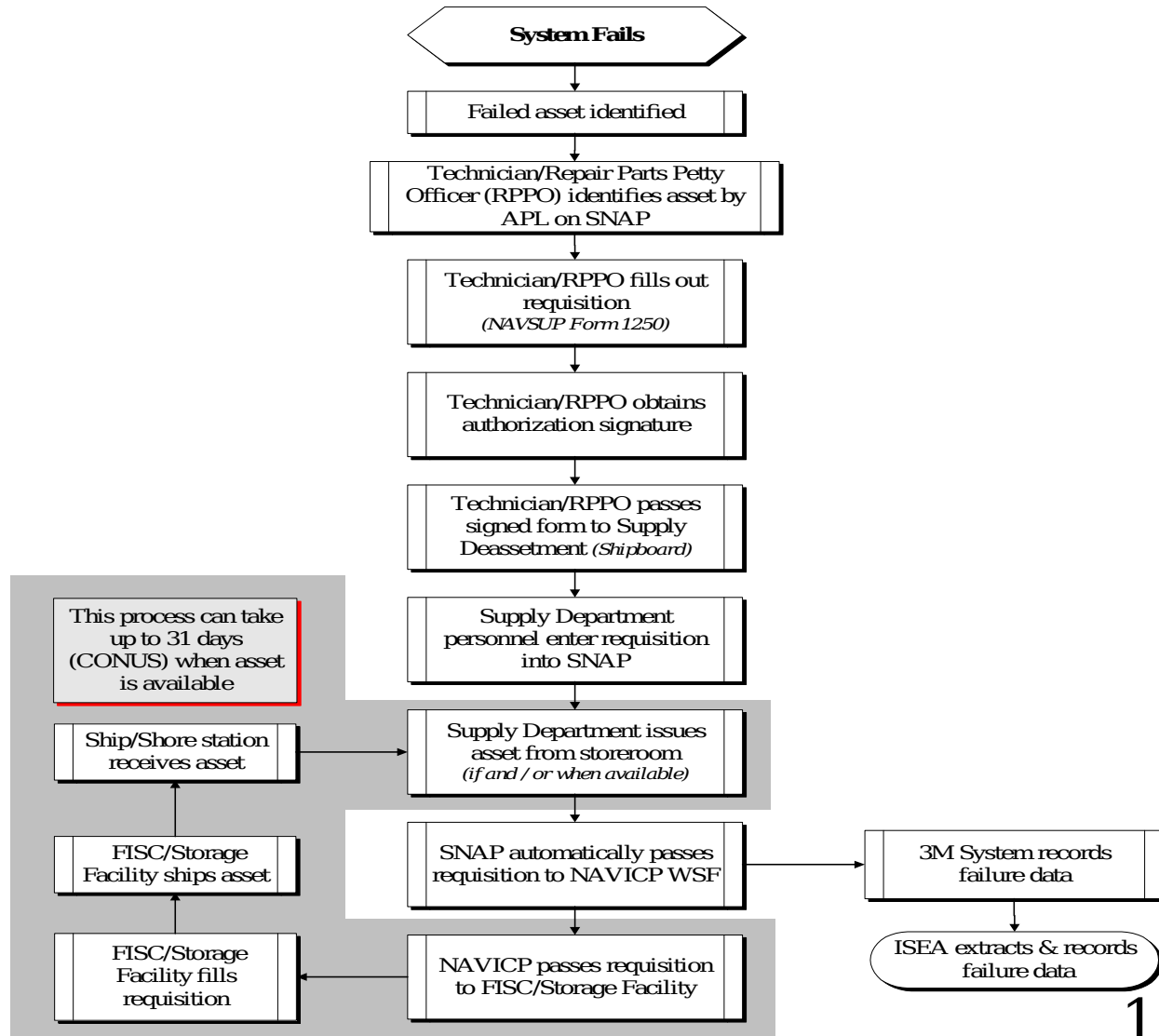


Configuration Data

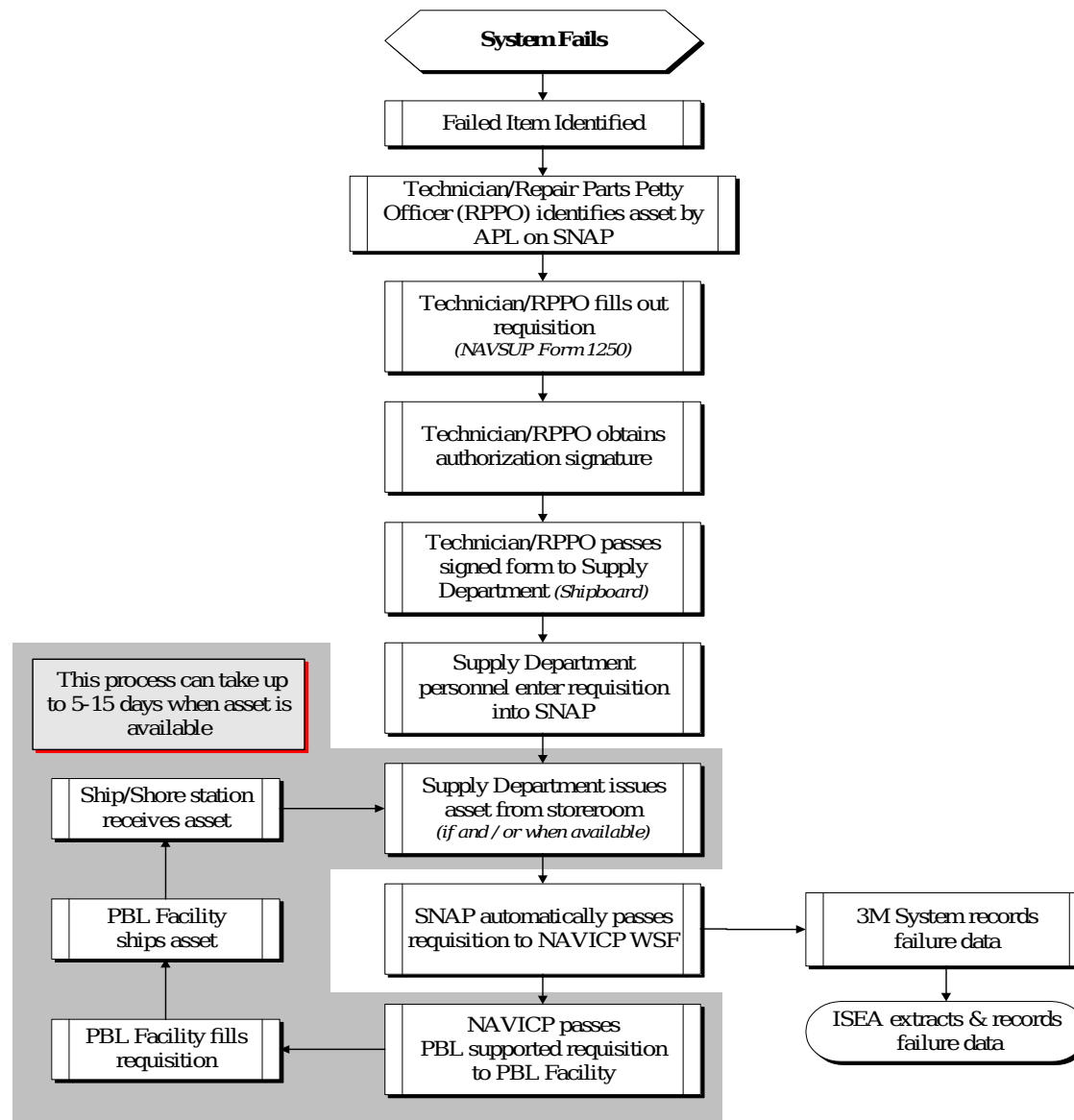
Land-Based



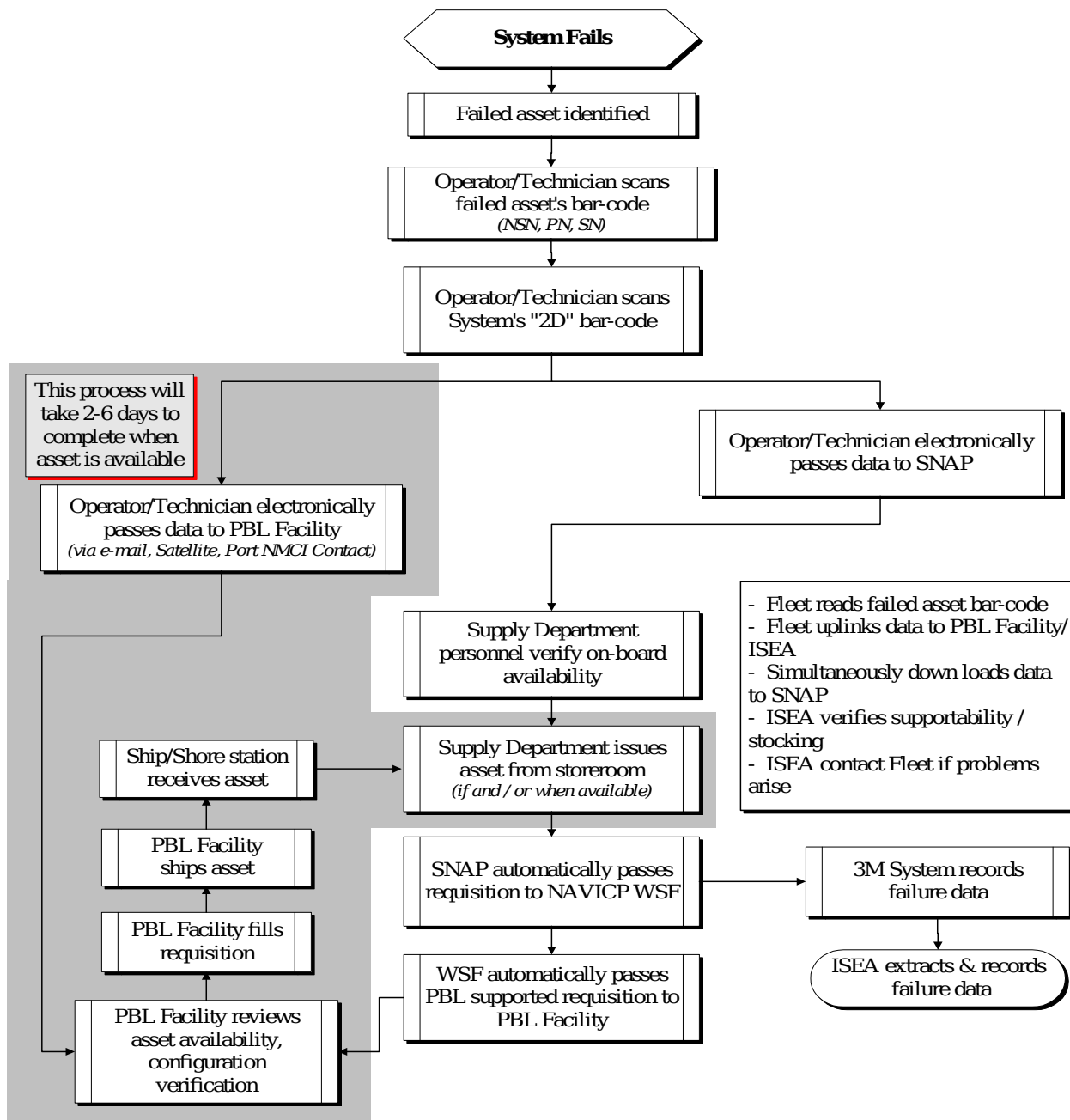
STANDARD REQUISITIONING PROCESS (Non - PBL)



STANDARD REQUISITIONING PROCESS (PBL)



2D ADVANCED NOTIFICATION ORDERING FOR PBL PROCESS



ACSAT

Implementation/Vision

- Phased Approach
 - Phase I
 - Establish Capabilities
 - Procure Equipment
 - Proof of Concept
 - Phase II
 - Establish Fleet Interface with Existing Systems
 - Phase III
 - Investigate Auto Configuration Detection